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[Japanese \(PDF\)](#)[File Wrapper Information](#)

[Translation done.]

FULL CONTENTS CLAIM + DETAILED DESCRIPTION
TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS
EXAMPLE

[Translation done.]

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Notes:

1. Untranslatable words are replaced with asterisks (***)
2. Texts in the figures are not translated and shown as it is.

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FULL CONTENTS

[Claim(s)]

[Claim 1] It homogenizes, after grinding foodstuffs which are the targets of extraction and/or juice and making a low-temperature dispersion medium below 60 ** distribute, How to manufacture extract and/or squeezed juice which are characterized by removing extraction slag and/or juice slag if needed after [a basin system of a foodstuffs useful component] extracting and/or emulsifying.

[Claim 2] A method according to claim 1 characterized by a thing for which foodstuffs which are the targets of extraction and/or juice are chosen from coffee, green tea, tea, oolong tea, Pu-Er tea, iron Kannon tea, herb tea, wild

grass tea, Chinese medicine tea, cocoa, a vanilla bean, fruits, and vegetables, and which is one at least.

[Claim 3]Foodstuffs used as this object are what extracts a dry matter and serves as luxury goods, A manufacturing method of the extract according to claim 1 or 2 characterized by a thing which is chosen from coffee, green tea, tea, oolong tea, Pu-Er tea, iron Kannon tea, herb tea, vegetable tea, Chinese medicine tea, cocoa, and a vanilla bean, and which is one at least.

[Claim 4]A method given in any 1 paragraph of Claims 1-3 to which a low-temperature dispersion medium is preferably characterized by being a -5-50 ** low-temperature dispersion medium still more preferably at 50 ** or less at less than 60 **.

[Claim 5]a dispersion medium -- water; -- milk; -- dairy-products; -- inside of these -- at least -- one -- a saccharide. A method given in any 1 paragraph of Claims 1-4 characterized by a thing which is chosen from liquid; of sugar-alcohol, a mineral, vitamin, a stabilizer, an emulsifier, and a bacteriostatic in which one was made to distribute and/or dissolve at least, and which is one at least.

[Claim 6]Homogenization continuously target foodstuffs dispersion liquid in a homogeneous valve which has a narrow gap High pressure, A method given in any 1 paragraph of Claims 1-5 being what uses a homogeneous machine provided with a pump made to dip at high speed, shears and/or grinds foodstuffs by a physical impact, and performs extraction and/or emulsification to a basin system of a foodstuffs useful component.

[Claim 7]A method given in any 1 paragraph of Claims 1-5 being that to which homogenization shears and/or grinds foodstuffs and performs extraction and/or emulsification to a basin system of a foodstuffs useful component by a physical impact by the rotation tooth using a homogeneous machine provided with a rotation tooth rotated at high speed.

[Claim 8]Extract with high extraction efficiency and/or juice efficiency in which one degradation is prevented thru/or controlled at least and/or squeezed juice of flavor, quality, and a color tone which are manufactured by a method of a description in any 1 paragraph of Claims 1-7.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to manufacture of extract and/or squeezed juice.

More particularly, it is related with the method of manufacturing efficiently the extract and/or squeezed juice which controlled oxidation as much as possible for a short time, by using a homogeneous machine.

[0002]

[Description of the Prior Art] When obtaining extract, for example, real coffee extract, industrially conventionally, the process which carries out the hot water extract of the coffee roast beans pulverization thing of the specified quantity with a direct vent type extraction column, a kneader, a decanter, etc. is an example of a usual state. However, the thing for which extraction operation must be repeated for every batch in this process, Even about 6 to 7 weight % is a maximum, and the soluble solid content content of the coffee extract obtained needs to perform a certain concentration operation, for example, vacuum concentration, freeze concentration, spray drying, etc. for obtaining the coffee essence which has a soluble solid content content beyond it.

[0003] Coffee roast beans deteriorate and dissipate quickly the aroma aroma component which it originally has easily by short-time neglect for about 15 to 30 minutes, and the process of the forced cooling of the coffee extract by a refrigerant of the coffee extract which did in this way and was obtained with hot water is also indispensable. It is usually that such hot water extract operation is performed also manufacture of green tea, tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, etc.

A situation does not differ from the case of coffee greatly.

[0004] Thus, in the hot water extract currently performed industrially conventionally, neither astringency nor added flavor called a harsh taste ingredient is avoided, And, [such added flavor] [appear / while raising extraction efficiency / strongly]. The low-temperature extraction method was thought out, acted as Mizuide, and called it coffee (Dutch coffee and common name). [water drip methods extracted while the waterdrop which is the present extraction method is dropped, although coffee with little loss of an aroma aroma component with little astringency exists in a market]

In order to take 3 to 8 hours, and a long time to obtain the extract of 1% or more of soluble solid content, the product development which turns a profit industrially is in a very difficult situation, and is hardly put in practical use.

[0005]On the other hand, if it sees about extraction of green tea as an example of representation of kind tea, the extraction temperature of green tea will usually be about 60-70 **, and, in the case of industrial production, will usually be processed by batch cycles, such as a kneader and a decanter. Especially green tea is known for the influence which it has on the flavor of an extraction condition also in kind tea being great. If in the case of green tea the ingredients eluted in warm water differ and extraction temperature is generally low set up with extraction temperature, If the flavor ingredient which made the subject amino acid, such as L-theanine and glutamic acid, and various aroma components set up extraction temperature highly again, in addition to them, the astringency ingredient which made polyphenol etc. the subject will come to be eluted. Although an astringency ingredient is an important element which forms the flavor of green tea, if eluted superfluously, it will become the flavor which is not preferred.

[0006]Extraction with hot water brings about prompt fading of pigments, such as a green tea chlorophyll, and yellowing, and is known also for causing the fall of color flavor.

Although addition of vitamin C is validated at this prevention from fading, that effect is restrictive and addition of superfluous vitamin C brings about the result which is not preferred according to generating of a vitamin smell.

[0007]Therefore, extraction temperature, extraction time, a bath ratio (volume of the extracted water to the amount of use tea leaves comparatively), etc. are adjusted to extraction of green tea, and a condition setup is carried out so that the most desirable flavor may be obtained. However, as long as hot water extracts green tea, fading of an extracted solution of green tea advances, and it does not escape that a desirable aroma quickly peculiar to green tea dissipates. If the usual low-temperature extraction is chosen and extraction temperature is conversely set to this low, since soluble solid content becomes difficult to be eluted, extraction will take a long time to it and it will reduce productivity remarkably.

Therefore, the usual low-temperature extraction method

cannot be used for industrial production.

[0008]In the above, although conventional technology has been explained mainly from quality or an organic-functions side, in manufacture of extract, economical efficiency and the field of industrialization are also still more important, and a coffee roast beans pulverization thing is explained about an example about this point.

[0009]Real coffee extract is used as a main raw material of commercial coffee drinks, such as a can, PET, and a paper carton.

At the time of coffee drink manufacture, it is used, carrying out required quantity private extraction, and also a concentration coffee essence is manufactured by vacuum concentration and freeze concentration by making this into a starting material, further, spray drying of this part is carried out with a dryer, and instant coffee is manufactured each time.

Since the quality of this real coffee extract influences a final product greatly, each beverage manufacturer company elaborates the processing condition of coffee roast beans, and is attaining differentiation of goods. Here, the processing condition of coffee roast beans refers to conditions, such as roast, pulverization, and extraction.

Extraction efficiency is mentioned as one index on the extraction condition of coffee roast beans. This is a rate of the soluble solid content weight of the coffee roast beans in a callable extracting solvent (generally water, such as ion exchange water, soft water, and well water) to the weight of the coffee roast beans fed into extractors, such as a direct vent type extraction column, a kneader, and a decanter, and expresses the efficiency of extraction operation.

[0010]generally, highly transparent, if extraction efficiency is set up low -- a coffee scent remains well comparatively. While the extract of the good flavor in which there felt aftertaste refreshed is obtained, it must become weak or diluted coffee extract of a feeling of a body, for taking out coffee flavor with a final product strongly, the amount of the coffee extract used must be increased, and there is a fault to which economical cost becomes high. If extraction efficiency is set up highly, on the other hand, [the coffee extract which coffee extract with a feeling of a body was obtained, and was obtained while comparatively few products designs of the amount used became possible] Are

easy to become cloudy, and aftertaste is made it not only to cause the exterior fault of coffee oil surfacing on the extract surface, but to produce bitter taste and harsh taste, and having a bad influence on flavor is known.

[0011]Thus, the actual condition is that the trial which raises the extraction efficiency of coffee extract cannot but set up a maximum permissible in cost from the bad influence to the flavor to a final product.

Controlling extraction efficiency to fixed management width causes schedule controlling.

Here, the degree of roast of roast coffee beans, the degree of crushed grain, the expiration date and the extraction temperature of extract, extraction time, cooling temperature, etc. are mentioned as a general factor. In industrial production, it is usually that extraction efficiency is set up to about 22 to 30% in consideration of economical efficiency and the flavor of a product.

[0012]Coffee extract is affected by the influence of oxidization, hydrolysis, heating, etc., and has the character to be easy to deteriorate very in quality. the real coffee in which such a phenomenon carried out drip extraction at home, for example -- a pot etc. -- warming -- when it holds, it is the scent of pure coffee dissipating, setting daily acidity becoming strong etc., and experienced. Therefore, various methods have been examined industrially that the factor which has such a bad influence should be eliminated.

[0013]For example, although extraction of a coffee roast beans pulverization thing is usually performed at about 95 **, the method of providing the coffee drink which has the original flavor of coffee by carrying out at low temperature 90 ** or less as mentioned already is known. To be sure, according to this method, it is possible to reduce the influence of oxidization, heating, etc., and ** is possible for obtaining coffee extract with good flavor once. However, extraction at low temperature causes decline in extraction efficiency, and the yield decreases. Although it is possible to raise extraction efficiency by lengthening extraction time, the fault that the working rate of an extractor falls is not avoided, but the usual low-temperature extraction method is unsuitable to industrialization after all.

[0014]Since this point is improved, it is also possible to raise extraction efficiency by grinding coffee roast beans finely and increasing contact surface area with an extracting

solvent, but. Having a bad influence on flavor and appearance, such as generating of bitter taste and harsh taste, on the other hand at nebula of the coffee extract mentioned above, surfacing of the coffee oil on the surface of extract, and aftertaste is known. Phenomena, such as clogging in the filter mesh in the extractor of coffee roast beans fine particles, may also be generated, and equipment special to removal of these fine particles may be needed.

[0015]It is not only very difficult to secure the extraction efficiency which can bear industrial cost in extraction with the hot water in 70 ** or less although it is the above-mentioned low-temperature extraction, but it only extracts coffee roast beans at the temperature of 70-90 **, A coffee pure scent dissipates promptly, causing the flavor deterioration of **, such as receiving the liquefaction by oxygen in the air of coffee oil, is not avoided, and it has not resulted in essential problem solving.

[0016]Neither a high temperature extraction method nor a low-temperature extraction method may not be satisfied, and it is the same about other foodstuffs as were described above, and neither a high temperature extraction method nor a low-temperature extraction method may not be satisfied in coffee and it mentioned already also in green tea.

[0017]

[Problem to be solved by the invention]As described above, in a high temperature extraction method, degradation of the flavor quality of a product is not avoided but to this, [a low-temperature extraction method] In [extraction efficiency and juice efficiency are bad, and it is not industrial, and] this conventional method, The foodstuffs which are generally the targets of extraction and/or juice, for example, coffee, From single articles, such as green tea, tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, cocoa, a vanilla bean, fruits, and vegetables, or such combination articles, promptly after grinding soluble solid content with a low-temperature solvent, Efficient and continuous, and in order [when using the solvent in which it is very difficult with which extraction and/or to carry out juice for a short time, and they contain protein and lipids, such as milk,] to raise extraction efficiency, high temperature extraction -- not choosing -- it could not but obtain but it had to be dared as the compensation to take the risk of flavor deterioration, such as solidification by heating of protein, and

deterioration of a lipid.

[0018]Thus, in a conventional method, both a high temperature extraction method and a low-temperature extraction method in view of there being a decisive problem, [this invention] It is made in order to newly develop the epoch-making method that the extraction efficiency and juice efficiency which it not only can extract a desirable wind flavor, but can carry out juice in a short time which especially industrialization was also considered are high.
[0019]

[Means for solving problem]This invention is made to achieve the above objects, and, [this invention persons] [by adding a dispersion medium of low temperature instead of high temperature using a homogeneous machine as a result of examination from every direction, and adopting new composition of processing with a homogeneous machine, for the first time] Extract, such as coffee which have neither harsh taste nor astringency and other added flavor, and was excellent in a wind flavor, is obtained extremely for a short time, And if it is in that extraction efficiency -- soluble solid content can collect with high yield -- is very high in that case, and a case of real coffee, In spite of having extracted extract with water, it assumed opalescence which mixed milk, and with extract by the usual extraction method, becoming new foodstuffs which differ in appearance clearly also discovered for the first time.

[0020]It not only can manufacture extract, but by processing with a homogeneous machine using a low-temperature dispersion medium, from non-dried foods, such as fruits and vegetables, it can manufacture squeezed juice, i.e., juice, and this invention is one of the features that extraction and a point in which both sides of juice are possible are also big. And also in juice, quality squeezed juice in which degradation of a wind flavor was controlled like a case of the above-mentioned extraction can be manufactured at a very high yield and juice efficiency.

[0021]And a kind of dispersion medium can also be replaced by dispersion media other than water, for example, milk and others, again, In that case, a thing for which a product which was rich in various kinds of varieties according to a solvent which carries out milk coffee and other use can be efficiently manufactured by very easy

operation, And many new useful knowledge that an unknown product could also be conventionally manufactured depending on a solvent and processing object foodstuffs to be used was acquired for the first time.

[0022]This invention is completed at last based on these useful new knowledge as a result of research. Hereafter, this invention is explained in full detail.

[0023]In order to carry out this invention, after grinding especially pulverizing object foodstuffs, it usually homogenizes. Homogenization continuously target foodstuffs dispersion liquid using the pump made to dip at high pressure and a high speed in the homogeneous valve which has a narrow gap with this physical impact, Foodstuffs are sheared and ground and foodstuffs are processed like the above by the physical impact by the rotation tooth using the thing which performs the extraction and/or the emulsification to the basin system of a foodstuffs useful component, or the rotation tooth rotated again at high speed.

[0024]If homogenization is a device which can carry out the above-mentioned homogenizing step besides being a high-pressure type homogeneous machine, a homogeneous machine of the type to which the high velocity revolution of the rotation tooth is carried out, etc., Shache pump, my RUDA, colloid mill, and others various kinds of commercial items in which a various device is usable are usable suitably.

[0025]In homogenization, it is [more than 20 kg/cm²] desirable to apply the homogenization pressure more than 100 kg/cm² preferably. When homogenization pressure is too low, extraction efficiency falls and it becomes impossible to fully acquire the effect of this invention. Although it does not limit in particular, homogenization is performed above pressure 150 kg/cm², and it usually homogenizes in many cases above 500 kg/cm².

[0026]In this invention, although processing object foodstuffs are homogenized, foodstuffs need to homogenize, after making a low-temperature dispersion medium distribute in that case. Thus, extraction and/or juice are carried out moreover extremely for a short time efficiently, controlling oxidization controlling generation of added flavor and holding the quality of a useful component by homogenizing under low-temperature conditions.

[0027]Thus, extraction and/or after carrying out juice, in

accordance with a conventional method, separation removal of extraction slag and/or the juice slag is carried out (a liquid cyclone, a clarifier, centrifugal separation, filtration, precision filtration, decantation, etc.), and the extract and/or squeezed juice (juice) which are made into the purpose are obtained. When asking for use for textiles or pulp, for example in the case of vegetable juice or fruits juice, it is not necessary to separate slag completely and the separation of slag itself cannot be performed depending on the case.

[0028] In this invention, it homogenizes under low-temperature conditions using a low-temperature dispersion medium, and less than 60 ** of low-temperature dispersion media [55 ** or less of] 50 ** or less are used still more preferably. Although what is necessary is just the temperature which a solvent does not freeze and it is based also on the kind of solvent about a low-temperature minimum, it is not less than -5 **, and it is usually preferred to consider it as not less than -3 **. Although a 5-20 ** low temperature region is illustrated in the embodiment, specifically, this invention is feasible also in a 2-30 ** low temperature region or the above-mentioned low temperature region. A cooling device may be provided in a homogeneous machine with necessity.

[0029] As a dispersion medium, the dispersion medium of each of these ingredients illustrated to one next at least besides water, milk, and dairy products (fresh milk, skimmilk, whey, sour milk, carrying out reduction whole powdered milk reduction skimmilk powder etc.) which adds one at least is usable.

[0030] a saccharide (glucose, fructose, a shook sirloin, a lactose, and a maltose.) oligosaccharide (a trehalose, a raffinose, lactulose, and a melibiose.) RAKUTO oligosaccharide, galactosaccharide, a fructo oligosaccharide, and other galacto-oligosaccharide and; isomerized sugar; liquid sugar; sugar-alcohol (erythritol.) xylitol, maltitol, and other sorbitol and; minerals (calcium.) Magnesium, sodium, another potassium and; vitamin (vitamin A, B, C, D, E in addition to this); stabilizer (pectin, carboxymethyl cellulose, others); bacteriostatics, such as sucrose fatty acid ester and polyglyceryl fatty acid ester, an emulsifier, a pH adjuster, perfume, a pigment, others.

[0031] Although the extract and/or squeezed juice by which degradation of flavor quality was prevented by

homogenizing various foodstuffs in this invention using a low-temperature dispersion medium using the above-mentioned method are obtained, More than one sort or it of : coffee, the green tea, the tea, Chinese tea (oolong tea, Pu-Er tea, iron Kannon tea, etc.) and herb tea in which the following are illustrated as processing object foodstuffs, wild grass tea, Chinese medicine tea, cocoa, a vanilla bean, fruits, and vegetables

[0032]It is as follows when the embodiment of the manufacturing method of the extract by the low-temperature homogenization concerning this invention and/or squeezed juice is illustrated.

[0033]The foodstuffs which are generally the targets of extraction and/or juice, for example, coffee (Mode 1), Green tea, tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, cocoa, a vanilla bean, Fine-grinding processing of single articles, such as fruits and vegetables, or such combination articles is carried out, -Give homogenization aiming at the extraction and/or the emulsification to the basin system of a foodstuffs useful component after making suitable dispersion media, such as 3 to 50 ** water, distribute, A manufacturing method which obtains the flavor whose extraction and juice efficiency are very high and, which is fresh and the extract which has a color tone removing extraction slag and juice slag by a certain means, and/or squeezed juice.

[0034]The palatability food and drinks generally obtained from extraction of a dry matter, for example, coffee (Mode 2), Single articles, such as green tea, tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, and cocoa, Or after carrying out fine-grinding processing of such combination articles and making suitable dispersion media, such as -3 to 50 ** water, distribute, A manufacturing method which obtains the flavor whose extraction efficiency is very high and, which is fresh and the extract which has a color tone which give homogenization aiming at the extraction and/or the emulsification to the basin system of a foodstuffs useful component, and are characterized by removing extraction slag by a certain means.

[0035](Mode 3) After carrying out fine-grinding processing of the roasted coffee beans and making suitable dispersion media, such as -3 to 50 ** water, distribute, A manufacturing method which obtains flavor whose

extraction efficiency is very high and, which is fresh and extract which has a color tone which give homogenization aiming at extraction and/or emulsification to a basin system of a foodstuffs useful component, and are characterized by removing extraction slag by a certain means.

[0036](Mode 4) Fine-grinding processing of the kind tea, such as green tea, tea, oolong tea, herb tea, wild grass tea, and Chinese medicine tea, is carried out, -Give homogenization aiming at extraction and/or emulsification to a basin system of a foodstuffs useful component after making suitable dispersion media, such as 3 to 50 ** water, distribute, A manufacturing method which obtains flavor whose extraction efficiency is very high and, which is fresh and extract which has a color tone removing extraction slag by a certain means.

[0037](Mode 5) After carrying out fine-grinding processing of the greenstuff, such as a carrot and a tomato, and making suitable dispersion media, such as -3 to 50 ** water, distribute, A manufacturing method which obtains flavor whose juice efficiency is very high and, which is fresh and squeezed juice which has a color tone which give homogenization aiming at extraction and/or emulsification to a basin system of a foodstuffs useful component, and are characterized by removing juice slag by a certain means.

[0038](Mode 6) In a homogeneous valve which generally has a narrow gap, continuously, at high pressure and a high speed, a homogeneous machine is target foodstuffs dispersion liquid a pump made to dip, and with this physical impact, A manufacturing method which obtains extract indicated in any 1 paragraph of the modes 1-5 being the homogeneous machines which shear and grind foodstuffs and can attain extraction and/or emulsification to a basin system of a foodstuffs useful component, and/or squeezed juice.

[0039](Mode 7) A homogeneous machine is provided with a rotation tooth generally rotated at high speed, and with a physical impact by the rotation tooth, Extraction indicated in any 1 paragraph of the modes 1-5 shearing and grinding foodstuffs and attaining extraction and/or emulsification to a basin system of a foodstuffs useful component, and/or a manufacturing method which obtains squeezed juice.

[0040]Manufacture of extract of coffee, i.e., a coffee roast beans pulverization thing, is taken for an example, and this

invention is explained below concretely. That is, pulverization processing of the coffee roast beans is carried out, homogenization aiming at extraction and/or emulsification to a dispersion medium of a foodstuffs useful component is given after distributing this to suitable dispersion media, such as -3 **-50 ** water, coffee extraction fine-particles slag is removed by a certain means, and a coffee extraction method is manufactured.

[0041]According to this method, it becomes possible to raise extraction efficiency which is usually 22 to 27% to about 40%. Usually, since about 30% is made into a limit, the soluble solid content which can be extracted from coffee roast beans can collect about 1.3-time soluble solid content as compared with these. Obtained real coffee extract is assuming opalescence which mixed milk, differs in appearance from extract by the usual extraction method clearly, and can be called new foodstuffs.

[0042]Leakage of this takes place in efficient and the instant of soluble components from the coffee roast beans fine-particles surface under high pressure first with a homogeneous machine, Subsequently, as a result of forming the colloidal particle of an oleophilic ingredient (ingredient mainly named coffee oil generically) among soluble components (emulsification), it is for being tinged with opalescence by the light scattering of a colloidal particle. This nebula does not disappear by centrifugal processing and heat-treatment, either, and holds the very stable suspension. Bitter taste peculiar to hot water extract coffee and harsh taste were not sensed at all, but the freshly ground scent peculiar to coffee has revealed strongly the flavor of the real coffee extract obtained by this method, and under seal conditions, even if it neglects it at ordinary temperature for 24 hours, outstanding its flavor and scent are still maintained.

[0043]As the real coffee extracted with usual hot water was mentioned above on the other hand, extraction efficiency causes surfacing to the coffee extract surface of coffee oil depending on it being not only bad but conditions, and in response to the fact that [oxidization by oxygen in the air] promptly, it causes flavor deterioration. A coffee aroma aroma component usually dissipates promptly in neglect for about 15 to 30 minutes.

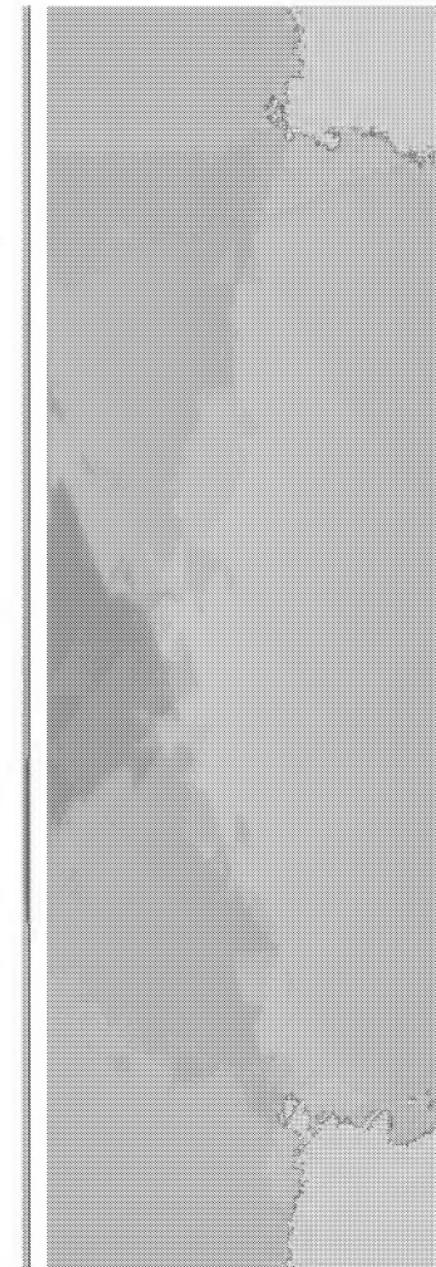
[0044]The desired end cannot be gained, even if it

homogenizes when hot water is used so that clearly [this point may also be the same as when it homogenizes and] also from the embodiment which carries out a postscript. That is, although it is the method of mixing extraction feed with hot water, carrying out solid liquid separation after homogenization, and manufacturing extract, in the case where it is coffee, for example, the coffee oil contained in roast coffee beans about 15% emulsifies by homogenization, and shifts to extract. Since the aroma component of the lipophilicity used as the coffee feature scent has melted into coffee oil, the extract containing many coffee oil has coffee flavor desirable originally. However, the extract which coffee oil oxidized very easily and was prepared by the above-mentioned method on the other hand is difficult for obtaining the desirable coffee flavor which oxidization of coffee oil is promoted and is originally expected by being exposed to high temperature by a hot water extract.

Existence of the coffee oil contained rather so much depending on conditions may cause flavor deterioration. Thus, this invention is a process with utility value very high as an extraction method of real coffee.

[0045]Coffee roast beans are ground by granulator, in order to usually acquire moderate extraction efficiency. In this stage, a roast coffee-beans pulverization thing is a several millimeters bit, even if this is distributed to a dispersion medium according to this invention and it tries to perform homogeneous processing by high pressure, a bit of coffee roast beans is stuck for a homogeneous valve, and uniformity is not easy. Therefore, in order to perform efficient extraction processing, it is necessary to carry out fine-grinding processing preparatorily to a particle size which can process coffee roast beans with a homogeneous machine. Preliminary grinding of coffee roast beans brings about a result in which preparing to 100 micrometers or less is [particle diameter of 1000 micrometers or less] desirably good. By a device with various preliminary grinding, although it is possible, a stone mill, a hammer mill, a ball mill, a jet mill, a nano mizer, a frost-shattering machine, etc. are mentioned, for example. When flavor of real coffee extract is taken into consideration, it is desirable to use a device with as much as possible little generation of heat at the time of grinding.

[0046]Although uniformity is as stated above, in



pressurizing a homogeneous valve, when a high-pressure type homogeneous machine is used, it is [more than 20 kg/cm²] desirable to apply homogenization pressure more than 100 kg/cm² preferably. When homogenization pressure is too low, it becomes difficult to exceed 35% and it becomes impossible for an effect of this invention to fully expect extraction efficiency of real coffee extract.

[0047]Although it must wait for details about a mechanism from which the quality characteristic of real coffee extract changes with homogenization a lot to future research, with an operation of powerful shearing of a homogeneous machine, a cavitation, etc., It is made by momentary and efficient leakage of soluble components, and Among these, caffeine, The dissolution to a dispersion medium of hydrophilic components, such as organic acids, such as a chlorogenic acid and quinic acid, and a mineral, Phenomena, such as suspension of dietary fibers, such as colloid emulsification of oleophilic ingredients, such as coffee oil, and a hemicellulose, and discharge of an aroma aroma component which has not received thermal denaturation, happen, and it is thought by conventional hot water extract real coffee extract that flavor, a color tone, and texture which are not seen are appeared.

[0048]In this invention, low-temperature homogenization is carried out, temperature at the time of extraction is one of the important requirements, and less than 60 ** is 55 ** or less preferably like previous statement. Although it does not limit, generally, a suitable temperature region is -3-50 **, and is 10-40 ** still more preferably. When extraction of roast coffee beans is mentioned as an example, if extraction temperature is too low, the dispersibility of roast coffee beans which carried out fine-grinding processing may worsen, and it may interfere with manufacture -- uniform dispersion liquid are not obtained. Decline in extraction efficiency is not avoided, either. If extraction temperature exceeds 50 **, when it will become especially not less than 60 **, flavor deterioration accompanying oxidization of coffee oil stops conversely, making a meaning of this invention remarkably.

[0049]A dispersion medium usable at this invention is not limited to water, but its solvent by which general use is carried out is usable as an extracting solvent for various kinds of food materials like previous statement. If the milk

warmed, for example tends to extract coffee roast beans from use of milk being also very effective, for example, an organic acid leaking it by extraction of coffee roast beans. If the pH of extract is shifted to the acidity side and it comes to be less than pH 6.2, milk protein carries out acid condensation by warming, and normal extraction is difficult for it. Therefore, although addition of pH adjusters, such as sodium bicarbonate, etc. is needed, change [flavor / of an original cafe au lait] is not escaped. However, in this invention, since milk can be extracted with low temperature, if temperature is low, since it is not generated, such acid condensation can reproduce the flavor of the full-scale cafe au lait which blended milk and real coffee at home as it is. The obtained cafe au lait often held the coffee freshly ground scent, and had the coffee-flavored milk flavor of mild aftertaste.

[0050] Since fine extraction slag is contained in the real coffee extract processed with the high-pressure type homogeneous machine, it is necessary to carry out separation removal by a certain method. Although this invention does not prescribe the method, use of a filter, microfiltration, a liquid cyclone, a clarifier, a decanter, etc. is possible like previous statement as a general separation removal method.

[0051] In this invention, improvement in extraction efficiency and the manifestation of a new and characteristic quality characteristic are accepted also in palatability food and drinks generally obtained from extraction of a dry matter, such as tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, and cocoa.

[0052] In the case of green tea and a herb, like coffee, very high extraction efficiency is acquired and extract assumes the beautiful green which is not obtained with warm water. Flavor does not almost have astringency and added flavor, it is the feature to have mild aftertaste and the quality characteristic which reversed old common sense is shown.

[0053] In Chinese medicine tea, it is possible to extract compared with a general hot water extract, without giving a thermal damage to an effective crude drug ingredient. The recovery of an active substance also rises sharply.

[0054] In the case of fruits and vegetables, although squeezed juice is obtained through a juice process, it becomes possible [the juice by this method] also for

carrying out pulverization processing of a dried fruit or the dehydrated vegetables, and pulverizing by frost shattering or other means. For example, in the case of a carrot, the efficiency of juice can increase and the recovery of carotene which is a nutrient in which a carrot is still more important can be raised. Since the obtained squeezed juice has the high carotene content, it assumes skillful orange and flavor is also excellent.

[0055]Thus, this invention enables it to raise sharply extraction of single articles, such as coffee, green tea, tea, oolong tea, herb tea, wild grass tea, Chinese medicine tea, cocoa, a vanilla bean, fruits, and vegetables, or such combination articles, and/or the efficiency of juice. The extract and squeezed juice which were obtained have a quality characteristic with very high respectively utility value.

[0056]

[Working example]Although an embodiment is given to below and this invention is explained to it, thereby, this invention is not limited.

[0057]

[Work example 1]The coffee beans from Colombia roasted to the L value 21 were pulverized so that it might become after pulverization by granulator and might be set to 100 micrometers or less with a mortar. Then, to one copy of pulverized coffee beans, 20 copies of 20 ** desalinated water was added, and it uniformed by 150 kg/cm² with the high-pressure type homogeneous machine (made by the Sanwa machinery company). The obtained extract performed centrifugal processing for 750 G or 10 minutes. The weight of the supernatant liquid was measured and the soluble solid content was measured with the saccharimeter. And extraction efficiency was calculated from this weight and the value of soluble solid content. Same operation was performed even if it used 20 copies of desalinated water (40 **, 60 **, and 90 **). As a contrast article, 20 copies of 20 ** desalinated water was added to one copy of pulverized coffee beans, and the sample which performed centrifugal processing for 750 G or 10 minutes was prepared after maintenance for 10 minutes. The sample prepared with 90 ** desalinated water was also prepared. Five special panels performed flavor comparison by the sample prepared to 1.0% of soluble solid content.

[0058]Thus, the prepared sample is summarized to below and shown.

(Contrast)

b. 20 ** desalted water extraction RO : 90 ** desalted water extraction (this invention)

**: 20 ** desalted water uniformity extraction NI : 40 ** desalted water uniformity extraction (contrast)

**: 60 ** desalted water uniformity extraction HE : 90 ** desalted water uniformity extraction [0059]A test result is shown in the following table 1. The measurement item is as follows.

A: Extraction efficiency (%)

B: Color tone C : flavor feature (at the time of 1% of coffee soluble solid content preparation)

C1: -- a scent -- C2:bitter taste C3:acidity C4:added flavor

C5: -- an overall evaluation [0060]organic-functions evaluation performed five-step evaluation on an absolute scale (1: -- weak/-- bad -5: -- strong/-- good) by five special panels, and used average value as the score.

[0061]

(Table 1)

| | A | B | C1 | C2 | C3 | C4 | C5 |
|---------------|------------|-------|-------|-------|-------|------------|-------------|
| ----- | ----- | ----- | ----- | ----- | ** 25 | Dark brown | 3.2 2.0 1.6 |
| 2.0 3.4 RO 29 | Dark brown | 2.8 | 3.6 | 2.8 | 3.4 | 3.4 | |
| ----- | ----- | ----- | ----- | ----- | ** 37 | Brown | 4.0 which |
| became cloudy | 2.0 | 1.4 | 1.4 | 4.4 | NI 38 | Brown | 3.6 which |
| became cloudy | 2.6 | 1.8 | 1.8 | 4.2 | ----- | ----- | ----- |
| ----- | ----- | ----- | ----- | ----- | ** 40 | Brown | 2.4 which |
| became cloudy | 3.0 | 2.5 | 2.0 | 3.2 | HE 42 | Brown | 2.2 which |
| became cloudy | 3.4 | 2.6 | 2.8 | 3.0 | ----- | ----- | ----- |

[0062]The extract obtained by homogenization showed the high extraction efficiency exceeding 35%, and the color tone presented nebula by emulsification of coffee oil so that clearly from the above-mentioned result. However, about these flavors, the temperature at the time of extraction influenced greatly, and, as for what was processed at 60 ** and 90 **, the degradation smell was accepted by oxidation of coffee oil. On the other hand, what was processed at 20 ** and 40 ** had a desirable scent, and had the good flavor which is not obtained in the general extraction method. Thus, it was shown that extraction temperature needs to be less than 60 ** for obtaining good flavor by uniformity extraction of coffee.

[0063]

[Work example 2] Green tea was processed with the frost-shattering machine, and fine particles of 10 micrometers or less were obtained. Then, to one copy of pulverized green tea, 20 copies of 15 ** desalinated water was added, and it processed by the colloid mill (made by PUC) of the continuous processing type. The obtained extract performed centrifugal processing for 1000 G or 10 minutes. The weight of the supernatant liquid was measured and the soluble solid content was measured with the saccharimeter. And extraction efficiency was calculated from this weight and the value of soluble solid content. Same operation was performed even if it used 20 copies of 95 ** desalinated water. As a contrast article, 20 copies of 15 ** desalinated water was added to one copy of pulverized green tea, and the sample which performed centrifugal processing for 1000 G or 10 minutes was prepared after maintenance for 10 minutes. The sample prepared with 95 ** desalinated water was also prepared. Five special panels performed flavor comparison by the sample prepared to 0.3% of soluble solid content.

[0064] Thus, the prepared sample is summarized to below and shown.

(Contrast)

(**) : 15 ** desalinated water extraction (**) -- : -- 95 **
desalinated water extraction (this invention)

(**) : 15 ** desalinated water uniformity extraction (contrast)

(**) : 95 ** desalinated water uniformity extraction [0065] A test result is shown in the following table 2. The measurement item is as follows.

a: Extraction efficiency (%)

b: Color tone c : flavor feature (at the time of 1% of soluble solid content preparation)

c1: -- a scent -- c2:bitter taste c3:astringency c4:taste c5: -- an overall evaluation [0066] organic-functions evaluation performed five-step evaluation on an absolute scale (1: -- weak/- bad -5: -- strong/- good) by a marks method by five special panels, and used average value as the score.

[0067]

(Table 2)

-----, a b c1c2 c3 c4 c5.

-----, (b) 22 -- dark green 3.6 3.0
2.2 2.4 2.4 -- dark green 3.2 [somber (***) 28] 4.24.8 2.0
1.6, -----, (***) 38 Skillful dark

green 4.0 1.6 1.4 3.6 4.0. Dark green 3.2 [somber
----- (***) 38] 4.0 4.6 3.0

2.0-----[0068]as compared with the contrast article whose both are 38% and whose extraction efficiency of the sample extracted by uniformity at 15 ** and 95 ** is a general extraction method, the difference clear-came out so that clearly from the above-mentioned result. However, the thing with strong bitterness and astringent taste in which the sample which carried out uniformity extraction at 95 ** has a bad color tone was the feature, and the overall evaluation was low. On the other hand, the sample which performed uniformity extraction at 15 ** presented skillful green and very good flavor, and it had a quality characteristic which is not acquired in the old extraction method.

[0069]

[Work example 3]The carrot which performed blanching treatment was processed with the frost-shattering machine, and fine particles of 500 micrometers or less were obtained. Then, 25 ** desalting water was mixed with these fine particles at a rate of 1:1, and it uniformed by 200 kg/cm² using the high-pressure type homogeneous machine (made by the Sanwa machinery company). The obtained liquid performed centrifugal processing for 1000 G or 10 minutes, and removed a part for pulp. The efficiency of juice was computed from the weight and the soluble solid content content of the obtained carrot juice. That is, the amount of soluble solid content obtained from 100g of carrots was calculated. Squeezed juice was condensed to 42% of soluble solid content by the evaporator, and performed quality evaluation. The sample prepared by the same method as centrifugal processing or subsequent ones was used as a contrast article based on the squeezed juice obtained with the meat chopper. Five special panels performed flavor evaluation. The beta carotene content contained in concentration squeezed juice was analyzed by the HPLC method.

[0070]The obtained result is shown in the following table 3. However, the measurement item is as follows.

- (a): Juice efficiency (%)
- (b): Color tone (c) : flavor feature (c1) : it is fragrant (c2) and is :sweet taste (c3):overall evaluation (d):beta carotene (mg/100g).

[0071]organic-functions evaluation performed five-step evaluation on an absolute scale (1: -- weak/- bad -5: -- strong/- good) by a marks method by five special panels, and used average value as the score.

[0072]

(Table 3)

| | (a) | (b) | (c1) | (c2) | (c3) | (d) |
|---------|-----|--------|------|------|------|--------|
| Pair ** | 5.2 | orange | 2.2 | 3.0 | 3.2 | |
| 28, | | | | | | 8.2 -- |

skillful orange 4.0 4.6 4.4 48-----

[0073]The sample obtained by the juice method by this invention had high juice efficiency as compared with the contrast article, and has collected many beta carotene so that clearly from the above-mentioned result. It was checked that sweet taste and a scent are excellent also in [it is strong and] flavor.

[0074]

[Effect of the Invention]Think out that this invention homogenizes object foodstuffs under low-temperature conditions for the first time, and this invention Extraction of foodstuffs, and/. Or hot water is not used [in which high concentration extraction and/or juice are possible at low-temperature solvents, such as cold water, in carrying out juice], Production of a process even including mere extraction and not only distribution to the basin system of a foodstuffs useful component but emulsification stabilization of the oleophilic leached moiety is enabled continuously efficient again, And the obtained extract and/or squeezed juice do not spoil at all the flavor and color tone which foodstuffs originally have with heating, but have advantages, such as making it possible to manufacture industrially the food and drinks of the flavor which carried out private extraction at home. This invention is just an industrially very useful and new invention.

[0075]The foodstuffs in which this invention is generally the target of extraction or juice so that clearly also from the above-mentioned embodiment, For example, efficiently in points, such as a color tone, flavor, and an extraction ingredient, [vegetables / coffee, tea, herb tea, Chinese medicine tea, fruits] [soluble solid content] [extraction or the extract which carried out juice and was moreover obtained, and squeezed juice] An old concept is wiped away and it becomes possible to provide attractive quality

for consumers. Therefore, a manufacturer and consumer side can tell both sides the epoch-making production technology which gives a merit. The effect which can also carry out low-temperature homogenization twice or more, and was further excellent in that case is generated.

[Translation done.]

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